AGRICOLA is NAL's bibliographic database providing access to the NAL collection. AGRICOLA contains nearly 3.5 million citations to agricultural literature and is available on the Internet through the NAL homepage at *http://www.nal.usda.gov*

NAL provides reference and document delivery services in all aspects of agriculture. It also includes specialized information centers that provide customized information services on topics such as alternative farming systems, animal welfare, food and nutrition, technology transfer, rural development, and water quality.

For walk-in visitors, the library is open from 8:00 a.m. to 4:30 p.m., eastern time, Monday through Friday, except Federal holidays. Many of NAL's services are available at anytime through the NAL home page.

NAL can be contacted at:

- The National Agricultural Library
- Agricultural Research Service, USDA
- 10301 Baltimore Avenue
- Beltsville, MD 20705-2351
- (301) 504-5755
- e-mail: agref@nal.usda.gov

Cooperative State Research, Education, and Extension Service

The Cooperative State Research, Education, and Extension Service (CSREES) works with universities and other public and private organizations to advance research, extension, and higher education in the food and agricultural sciences and in related environmental and human sciences. Its programs increase and provide access to scientific knowledge, strengthen the capabilities of land-grant and other science and education institutions, expand accessibility and use of improved communication and network systems, and promote informed decisionmaking.

CSREES links the research and education resources and activities of USDA, improving customer service and responsiveness to emerging issues and national priorities. CSREES programs focus on improving economic, environmental, and social conditions in the United States and globally. These conditions include improved agricultural productivity and development of new products; safer food; cleaner water and air; enhanced stewardship and management of natural resources; healthier and more responsible individuals, families, and communities; and a stable, secure, diverse, and affordable food supply.

Partnership

The CSREES domestic and international research, education, and extension networks are strengthened with partnerships that maximize resources and program impact. An array of CSREES partners includes other USDA agencies, Federal and State government departments, nonprofit organizations, and private-sector entities. Working closely with the nationwide Land-Grant University System is central to CSREES programs. CSREES partners include:

- Over 130 colleges of agriculture, including land-grant institutions in each State and territory

NAL Selected Highlights:

- *AgNIC Growing*
  The Agricultural Network Information Center (AgNIC), an agricultural information system begun in 1996 by NAL and land-grant universities, continues to show significant growth. AgNIC links worldwide agricultural information networks, providing "one-stop shopping" to anyone searching the Web for agricultural information. In Fiscal Year 1999, AgNIC received nearly 18.5 million hits.
- *Access to Farming History Improved*
  Over 200 years of U.S. farming history can now be more easily identified and accessed through NAL efforts. The USDA history collection, dating to 1862 and before, was transferred to NAL in 1998. Since then, NAL has created a web site to improve access to the collection, as well as cataloged the items and taken steps to improve preservation of the collection.
- *Electronic Preservation Plans Developed*
  NAL has taken the lead in developing plans to preserve USDA electronic publications. USDA has made electronic formats the preferred method for releasing information to the public. Preservation and long-term access of these materials are an important issue due to the ephemeral nature of electronic formats. NAL has established a steering committee and several subcommittees that are addressing the issue and formulating preservation plans and procedures.
- *Food Safety Research Information Office Established*
  NAL has established a Food Safety Research Information Office. The office, mandated by the Agricultural Research, Extension, and Education Reauthorization Act of 1998, will provide information on food safety research initiatives to the research community and the general public.

- 59 agricultural experiment stations
- 57 State or territorial cooperative extension services
- 63 schools of forestry
- 16 1890 historically black land-grant institutions, and Tuskegee University
- 27 colleges of veterinary medicine
- 42 schools and colleges of family and consumer sciences
- 30 1994 Native American land-grant institutions
- 160 Hispanic-serving institutions
- Nonprofit organizations
- the private sector

Programs

CSREES research, education, and extension leadership is provided through programs in:

- Plant and Animal Systems
- Natural Resources and Environment
- Economic and Community Systems
- Families, 4-H, and Nutrition
- Partnerships
- Competitive Research Grants and Awards Management
- Science and Education Resources Development
- Communications, Technology, and Distance Education.

What Is CSREES?

- Development of knowledge leading to advancement in agriculture, the environment, community and individual well-being through problem-focused integrated research and education and targeted scientific efforts, including cutting-edge research programs on value-added product development, plant and animal genome mapping and biotechnology, integrated pest management, water quality, human nutrition, food safety, and animal and plant systems
- Model education programs in sustainable agriculture, water quality, food safety, risk management, children and families, health, environmental stewardship, distance education, and community economic development
- Higher education programs to develop the scientific and professional expertise needed to advance the food, agricultural, and natural resource systems and maintain excellence in college and university teaching programs
- Cooperative partnerships involving:
  —over 9,600 scientists engaged in research at 59 State agricultural experiment stations, 16 1890 colleges and universities, and Tuskegee University
  —over 9,600 local extension agents working in 3,150 counties
  —3 million trained volunteers working with national outreach education programs
  —6.5 million youth involved in 4-H programs that increase self-esteem and enhance problem-solving skills in a positive, supportive environment
- The National Research Initiative supporting research in the biological, physical, and social sciences to solve key agricultural and environmental problems
- A Small Business Innovation Research program to support high-quality research proposals containing advanced concepts related to important scientific problems and opportunities in agriculture that could lead to significant public benefit if the research is successful
- Immediate electronic access to vital information on safety and disaster recovery during time-critical disasters, such as hurricanes, wildfires, and floods

CSREES: Selected Highlights

- ***Easing Food Fears***
  Though cases of Salmonella food poisoning from eggs are rare, USDA-CSREES-funded research by Purdue, North Carolina State, and Texas A&M universities may make it nearly nonexistent. Purdue's low-temperature pasteurization process kills Salmonella on the egg shells without cooking the eggs. This process could increase the value of Indiana's egg industry alone by $40 million. Texas A&M researchers have also reduced the incidence of Salmonella in chickens by 75 percent by boosting young chicks' immune systems in a method similar to vaccinating humans against disease.
- ***Increasing Successes and Reducing Failures***
  Introducing and developing new plant varieties continues to boost the likelihood of success when farmers plant, grow, and harvest their crops. For example, USDA-CSREES has helped fund a rice breeding program at the University of Arkansas which has released 11 varieties of rice since 1980. These new varieties have increased the average yield by 1,700 pounds per acre in 1998, with an estimated value of $88 million annually. Two recently introduced varieties, Drew and Kaybonnet, are resistant to the State's two most costly diseases. With these varieties, growers can cut production costs by as much as $70 per acre by eliminating the need for chemical disease control.
- ***Adding Value***
  Finding ways to turn trash into treasure or adding new value to familiar products often makes the competitive difference in agriculture. For example, University of Florida researchers—with research funds from USDA-CSREES—developed a breakthrough biotech bacterium that became the basis for a new ethanol plant in Louisiana. The $90 million factory will use the patented, genetically modified bacteria to break down bagasse–an otherwise waste byproduct from sugar production–to produce ethanol. Also, a Colorado State University alternative crop specialist with support from USDA-CSREES has developed a canola-based motor oil which works just as well as the petroleum version but without the environmental drawbacks. The oil is about the same weight as 10w30, cuts hydrocarbon emissions by a third, and can be disposed of without environmental concern.

- ***Solving Local Problems Locally***
  In partnership with the land-grant network of extension specialists in nearly every county linked to regional and national expertise at colleges and universities, USDA-CSREES helps citizens overcome problems and make the most of opportunities close to home. In the first year of a Louisiana State University extension energy management program for school districts, for example, participating schools saved an average of 12 percent from their energy costs, for a total of more than $3.5 million. In New York City, a Cornell University program to improve landlord-tenant communications and promote more responsible ownership has reduced building code violations. The program is being adopted in Oregon, Mississippi, California, Massachusetts, and Colorado.
- ***Environment-Friendly Farming***
  With help from USDA-CSREES and land-grant universities, farmers are modifying their practices to create greater harmony between agriculture and the environment. As competition for water increases, these farmers are finding new ways to prevent pollution and to conserve and reuse water resources. USDA and Georgia scientists and extension agents teamed up to develop an environmentally friendly cotton cropping system which increased conservation tillage in Georgia from 88,400 acres in 1994 to more than 200,000 acres in 1998. On these acres, less soil and sediments reach streams and there is more soil organic matter on the soil surface. Tennessee growers using residue management systems introduced by extension have reduced soil erosion by 20 million tons annually and sediments in streams and lakes by 10 million tons annually.
- ***Eating Well***
  Despite the safety and affordability of America's food supply, diet-related diseases are all too common; poor diets and nutrition contribute to five of the 10 leading causes of death, costing the U.S. economy an estimated $250 billion annually. To address this, USDA-CSREES and its land-grant university partners are improving the quality of the American diet and reducing health-care costs. For example, when the Food and Drug Administration recently revised its recommended daily allowance for folate or folic acid, the change was based largely upon CSREES-funded research at the University of Florida showing deficiencies in this vitamin could increase risk of anemia, birth defects, and heart disease. Since cell division depends on folate, adequate amounts of the vitamin are critical for normal fetal growth and development, while aging adults need it to repair cells. Also, Texas A&M University researchers with CSREES support found that fish oil combined with the kind of fiber found in oranges could

protect against cancer development. They also discovered a new, non-invasive way to detect changes in colon cells that may be an indicator of possible colon cancer.

- ***Working Beyond Welfare***
  Programs offered by USDA-CSREES and the land-grant system are helping people move off welfare and into the job market while managing their finances and limited food dollars. Arizona extension's PHASE program, for example, has helped more than 6,000 single parents and displaced homemakers in Pima County complete their education and find jobs. The program offers job-related scholarships, job-seeking skills, and job placements. CSREES' Expanded Food and Nutrition Education Program (EFNEP) reaches low-income people with information on healthy food choices and wise use of food dollars. In Louisiana, extension reached nearly 4,000 families and more than 9,000 youth with EFNEP information. Of these, 95 percent made positive dietary changes, increasing consumption of milk, fruits, and vegetables; 48 percent said they ran out of food less often before the month's end.
- ***Managing Pests***
  For more than 30 years, USDA-CSREES and its land-grant university partners have been working to develop, evaluate, and share new methods to control pests that damage crops and invade homes. New technologies and integrated pest management (IPM) strategies bring together cultural, genetic, biological, and chemical methods to effectively control insects and plant diseases with fewer pesticides, reduce crop production costs, and create a safer environment. Extension programs in Florida, Pennsylvania, Indiana, Texas, and New York, for example, are teaching school maintenance workers how to use IPM practices to reduce or eliminate pesticides in and around their schools. The number of school districts in Florida routinely spraying pesticides has dropped from 75 percent to 40 percent. Forty percent of Pennsylvania school districts also are now implementing IPM programs. In Vermont, extension specialists are helping apple growers implement IPM programs that reduce reliance on pesticides by as much as 50 percent. Apple IPM programs in Ohio, Massachusetts, New Hampshire, Virginia, and many other States are producing similar results.
- ***Water: Making the Most of Every Drop***
  In finding ways to prevent pollution and improve water quality, USDA-CSREES and land- grant experts are helping farmers and others adopt practices that protect water quality and make the most of every drop. Non-point sources of pollution, such as farm fields, cause billions of dollars in damage each year. Louisiana State University

researchers and extension experts studied the movement of soil, plant nutrients, herbicides, and insecticides in surface runoff from corn and sugarcane, and taught growers how to maintain profits while reducing the amount of herbicide in Louisiana surface waters. In Nebraska, SPLASH is an extension program which teaches irrigators one-on-one how to reduce water, energy, and fertilizer use. This program has saved 46.4 million gallons of water on about 35,000 acres irrigated by cooperators.

- ***Surviving and Thriving in the Global Marketplace***
  If there is one hot commodity that's already commanding a premium in the international marketplace, it's information that helps American farmers improve their bottom lines and lowers grocery bills for consumers. Research and education programs funded by USDA-CSREES are helping U.S. producers survive and thrive at a time when new trade agreements are altering the global landscape. For example, Illinois researchers have found that high-quality soybeans command higher prices in European and Japanese markets, and that some foreign buyers are now specifying oil and protein contents in their contracts. These studies provided producers with incentives to revise soybean grades for more than 60 percent of U.S. exports. An innovative cattle breeding project at Washington State University has built a herd of Wagyu cattle imported from Japan, after studies showed that the breed could be produced in the Pacific Northwest and its beef marketed in the United States and Japan at premium prices.

Economic Research Service

Food assistance programs. Climate change. Risk management. Trade liberalization. Water quality. Concentration in agricultural industries. Agricultural productivity. Nutrition. Exports of U.S. farm products. Rural population trends. Food safety concerns.

The economics of these topics and many more are analyzed by USDA's Economic Research Service (ERS), the Department's social science research agency. As such, ERS provides information and analysis that is used by public officials in developing, administering, and evaluating food, farm, conservation, and rural policies and programs, as well as by consumers, agribusinesses, and farm operators in their decisionmaking. ERS analysts monitor and evaluate many issues requiring policy decisions by the Administration and Congress.

The agency has four principal functions: research, development of economic and statistical indicators, situation and outlook analysis, and staff analysis.